

WHAT IS CLAIMED IS:

1. An optical fiber photoelectric sensor unit which includes a rail attachment part on a bottom surface, a display part and an operation part on a top surface, fiber inlets on a front surface, and a cord drawing-out or connector type output part on a rear surface, and which is not more than 15 mm in a longitudinal direction of a rail, said optical fiber photoelectric sensor unit comprising:

two sets of light-emitting and light-receiving circuits corresponding to a first and second detection channels;

a single CPU which performs detecting operations of two detection channels by time sharing;

two output lines corresponding to two detection channels;

four fiber inlets aligned vertically on the front surface, lower two inlets being a pair of light-emitting and light-receiving inlets corresponding to the first detection channel, and the upper two inlets being a pair of light-emitting and light-receiving inlets corresponding to the second detection channel;

a first and second digital display parts which each display a string of digits in a longitudinal direction of a case and which are arranged in the longitudinal direction of the case on the top surface, wherein

the first digital display part displays an amount of

received light of the first detection channel, and the second digital display part displays an amount of received light of the second detection channel.

2. The optical fiber photoelectric sensor unit according to claim 1, wherein a first operation indicator light is disposed adjacent to the first digital display part, and a second operation indicator light is disposed adjacent to the second digital display part, and one of the first and second operation indicator lights is sandwiched between the first and second digital display parts.

3. The optical fiber photoelectric sensor unit according to claim 1, wherein selecting operation shifts display contents of the first and second digital display parts between the amount of received light of the first detection channel and the amount of received light of the second detection channel; the amount of received light and a threshold value of the first detection channel; and the amount of received light and a threshold value of the second detection channel.

4. The optical fiber photoelectric sensor unit according to claim 1 further comprising: a logical calculation means for performing logical calculation between detection results of the first detection channel and detection results of the second detection channel; and

an output line for outputting the logical calculation results of said logical calculation means.

5. The optical fiber photoelectric sensor unit

according to claim 1 further comprising a difference calculation means for calculating the difference between the amount of received light of the first detection channel and the amount of received light of the second detection channel; a discrimination means for discriminating difference calculation results of said difference calculation means by a threshold value; and output lines for outputting discrimination results of said discrimination means.

6. The optical fiber photoelectric sensor unit according to claim 1 further comprising a fiber locking mechanism for concurrently locking four fibers which are inserted into the four fiber inlets vertically arranged by operating a single clamp operator.

7. The optical fiber photoelectric sensor unit according to claim 1 further comprising a switching means for switching a detection channel which should perform detection operation between the first detection channel and the second detection channel alternately every time a detection operation timing, which is generated based on an external synchronous signal, arrives.

8. An optical fiber photoelectric sensor unit which includes a rail attachment part on a bottom surface, a display part and an operation part on a top surface, fiber inlets on a front surface, and a cord drawing-out or connector type output part on a rear surface, said optical fiber photoelectric sensor unit comprising:

two sets of light-emitting and light-receiving circuits corresponding to a first and second detection channels;

a single CPU which performs detecting operations of two detection channels by time sharing;

two output lines corresponding to two detection channels;

four fiber inlets arranged on the front surface;

a display device which is disposed on a top surface of a case and which displays a string of digits in a longitudinal direction of the case and also displays an amount of received light of the first detection channel and an amount of received light of the second detection channel in digital numbers.

9. The optical fiber photoelectric sensor unit according to claim 8, wherein said display device includes a first and second digital display parts which each display the string of digits in the longitudinal direction of the case and which are arranged in the longitudinal direction of the case, wherein

the first digital display part displays an amount of received light of the first detection channel and the second digital display part displays an amount of received light of the second detection channel.

10. The optical fiber photoelectric sensor unit according to claim 8, wherein

a size of the optical fiber photoelectric sensor unit in a longitudinal direction of the rail is not more than 15

mm, and

the four fiber inlets are arranged vertically on the front surface.

11. The optical fiber photoelectric sensor unit according to claim 10, wherein the four fiber inlets are aligned in such a manner that lower two inlets are a pair of light-emitting and light-receiving inlets corresponding to the first detection channel, and the upper two inlets are a pair of light-emitting and light-receiving inlets corresponding to the second detection channel.

12. The optical fiber photoelectric sensor unit according to claim 6, wherein said fiber locking mechanism comprises: a base block having four fiber insertion holes which are vertically arranged at appropriate intervals for receiving tips of the fibers; four flexible C-rings which are fixed to the base block in correspondence to the openings of the four fiber inlets of the base block; a common sliding actuator which is supported on the front surface side of the base block in a vertically slidable manner and which is engaged with the four C-rings to enlarge or reduce a diameter of the four C rings; and a clamp lever which is supported by the base block in a rotatable manner and which makes the sliding actuator slide by rotation.